[redacted]

are selected on the basis of specific fabrication technique and antenna performance requirements.

Test Results

In-car test results have confirmed that performance of the Sungate antenna is comparable to that of a fender whip

body, and a thorough evaluation of all factors affecting antenna performance. These include: slot width of the film, type of connection (direct or capacitive), windshield and vehicle geometry, and location of the connector.

These parameters can only be fully evaluated in a specific vehicle application by

- Ability to provide antennas for convertibles.

The Sungate antenna windshield offers system cost advantages to the automotive designer and multi-functional performance that can be used to help differentiate the total vehicle.

Solar Control

The Sungate antenna windshield offers all of the performance benefits of solar reflective glass. A laminated, high performance, solar control product, it's designed to reject both the infrared and ultraviolet portions of the solar spectrum while meeting all government requirements for visible light transmittance. And because the solar energy is reflected before it passes through the windshield, it is no longer available to be convected or radiated into the vehicle.

Solar energy can also be controlled by absorbing glasses, but in that more traditional approach, energy absorption and subsequent convection and re-radiation are determined by glass composition.

The difference between the solar control performance of reflecting glasses and absorbing glasses is best illustrated by a solar factor called TSETR (Total Solar Energy Transmitted and Radiated). TSETR measures both the direct energy transmitted through the glass and the energy radiated from the glass (resulting from absorption).

In TSETR comparisons with conventional green-tinted windshields and dark green-tinted windshields, the Sungate windshield clearly out-performs both.

Materials Degradation

Interior fabric materials tested in the Arizona desert climate have shown significantly less degradation when exposed behind the Sungate windshield as compared to conventional tinted windshields.

While degradation is basically caused by ultraviolet radiation, heat serves as an accelerator. Therefore, the temperature reduction provided by the Sungate windshield offers a definite advantage from a material deterioration standpoint, in addition to overall improvement in passenger comfort.

A Family of Automotive Glazing Options

PPG offers the broadest selection of automotive glazing for solar control now available from any one manufacturer in the world. For more information on the PPG family of solar control automotive glass, write to:

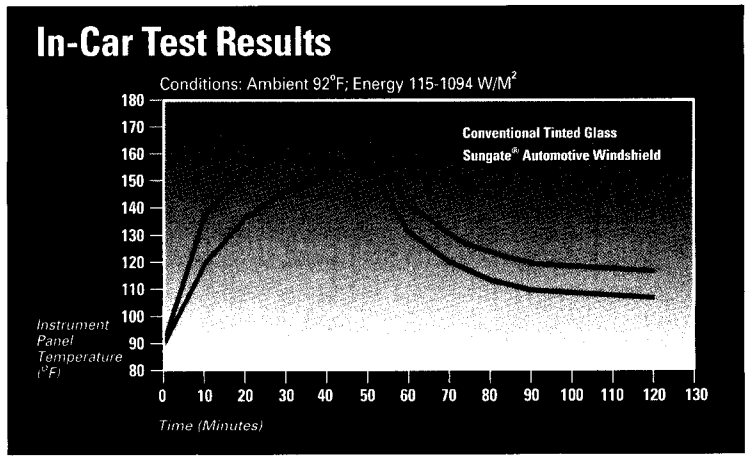
PPG Automotive Glass Products
One PPG Place - 32E
Pittsburgh, PA 15272

PPG AUTOMOTIVE PRODUCTS

Total Solar Energy Transmitted and Radiated (TSETR)
Sungate Windshield vs. Conventional Green- and Dark Green-Tints
(Total Windshield Thickness=5.4 mm)

	70% Light Transmittance Requirement (%)	*75% Light Transmittance Requirement (%)*
Conventional (Green-Tinted) Windshield	66	66
Dark Green-Tinted Windshield	61	66
Sungate Automotive Windshield	50	52

Note: The above values represent a stationary vehicle.



In-car testing in the Arizona desert confirmed the solar advantages of the Sungate windshield as compared to conventional tinted glass. According to test results shown above, interior surface temperatures are up to 20F degrees cooler in vehicles equipped with the Sungate windshield.